DEEP PENETRATION MAGNETOQUASISTATIC ARRAYS

ABSTRACT OF THE DISCLOSURE

Magnetic field sensor probes are disclosed which comprise primary or drive windings having a plurality of current carrying segments. The relative magnitude and direction of current in each segment are adjusted so that the resulting interrogating magnetic field follows a desired spatial distribution. By changing the current in each segment, more than one spatial distribution for the magnetic field can be imposed within the same sensor footprint. Example envelopes for the current distributions approximate a sinusoid in Cartesian coordinates or a first-order Bessel function in polar coordinates. One or more sensing elements are used to determine the response of a test material to the magnetic field. These sense elements can be configured into linear or circumferential arrays.